

## SAFETY IN THE CHEMISTRY ENTERPRISE

The American Chemical Society (ACS) believes that it is essential that the chemistry enterprise recognizes its obligation to advocate for the protection of the safety and health of stakeholders (e.g., laboratory personnel, building occupants, surrounding communities, end-users) and the environment. The practice of chemistry from concept, research, development, manufacture, use, transport, and disposal must be done safely to reduce adverse impacts on human health and the environment. Working with chemicals and developing new materials and chemical processes necessarily involves some degree of risk. A thoughtful and educated approach to chemical safety must include an analysis that minimizes risk and optimizes benefits.

Policymakers should encourage the chemistry enterprise to cultivate a positive culture of safety among all stakeholders. Regulatory agencies should always ensure the applicability and scale of policies so that various laboratory types (i.e., academic, industrial, pharmaceutical, etc.) are successful in implementation.

The scientific community must consider safety and ethics in its support for funding, education, scientific research, technology development, chemical manufacturing, and the recognition of scientific achievement. ACS supports continued funding of the U.S. Chemical Safety and Hazard Investigation Board and other international, national, state, and local investigative entities so that incidents and near misses can be investigated, lessons can be learned, case studies can be publicized, and actions can be taken to prevent recurrence. ACS advocates for robust support of agencies that protect workers and society at large (e.g., Occupational Safety and Health Administration, Environmental Protection Agency, etc.) are critically important in maintaining high levels of stakeholder safety and environmental protection.

The ACS recommends six core objectives, with no order or prioritization, to promote safety in the chemistry enterprise.

### 1. Evidence-Based Policies

- Chemical public policy and safety regulations should be developed based on risk assessment and the best available health and environmental information.
- Regulations should encourage safe practices and behaviors that are practical and well communicated to facilitate compliance.
- Authors of policies, laws, regulations, and guidance documents should regularly review current and peer-reviewed scientific and engineering information to identify and assess risks to people, property, and/or the environment.
- Subject matter experts that are recognized in the chemistry enterprise, should be consulted to craft sensible, logical, and effective regulations and public policy that avoid unintended consequences of regulations.

---

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Committee on Chemical Safety, and the Division of Chemical Health and Safety. ACS is a non-profit scientific and educational organization, chartered by Congress, with more than 230,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

- Policymakers should develop and implement processes to resolve inconsistencies among various federal, state, and local regulatory procedures that cause compliance conflicts.
- Programs should be developed that support research to identify and characterize chemical and process hazards and create better protective measures for workers, consumers, and the environment.

## 2. Safe Work Environments

- Regulations should support work environments and practices in the chemistry enterprise that:
  - promote a supportive, inclusive, and robust safety culture
  - encourage individuals to report safety issues, mistakes, and near misses without fear of punishment or blame, while also holding those responsible accountable
  - include a system for reporting near misses and investigating incidents.
  - require safe, secure chemical storage and work areas
  - are based on written policies and procedures which are applied consistently and people who work with the policies and procedures should have input into their development, implementation, and revision

## 3. Chemical Safety Information

- The ongoing collection and dissemination of safety information should be globally standardized across regulating agencies.
- Information should alert end-users about the foreseeable consequences of chemical product misuse and include best practices for purchase, storage, handling, use, and disposal of materials.
- Safety information should be:
  - comprehensive, clear, accurate, readily available, and fully accessible to individuals of all abilities and language backgrounds
  - derived from peer-reviewed scientific literature with transparent provenance

## 4. Risk-Based Safety

- The RAMP (recognizing hazards, assessing risk, minimizing risk, and preparing for emergencies) model should be used as an organizing principle for risk assessment and management.
- Policies should appropriately integrate risk-based safety across the chemistry enterprise using RAMP.
- Risk management is more robust when developed considering a variety of perspectives and all stakeholders have a voice in the process.
- Risk assessment practices should:
  - recognize the variability of risk among population groups,
  - provide preventive, sustainable, and protective measures that are evidence-based to protect human health and the environment.

## 5. Chemical Safety Education

- Regulations should support:
  - enhanced and ongoing chemical safety throughout a student's educational progression – beginning as early as possible with strong fundamentals of safety emphasized throughout every stage of a chemistry education
  - education and training in risk-based safety management for everyone involved in chemical use (purchase, storage, handling, and disposal)
  - educational programs in science that include the tenets of green chemistry
  - chemical safety representation for diverse populations of scientists, the public, and other stakeholders

## 6. Safety and Sustainability

- Sustainable chemistry advances safer research, fosters innovation, and contributes to a globally competitive US chemical industry.
- Responsible and ethical sourcing of chemicals and other raw materials used in production is made safer by incorporating life-cycle assessment.
- Rigorous, adaptable, and expedited protocols for evaluating inherently safer chemical products and processes should be developed in consultation (or collaboration) with industry, academia, scientific organizations, public interest groups, and other stakeholders.
- Funding agencies should continue to support stakeholders who create safer products, materials and processes.
- Policies, regulations, and incentives should encourage the adoption of safer and sustainable solutions.